

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for providing fault tolerance in a VLAN having a topology defined by a spanning tree having a root node and at least one leaf node, the root and leaf nodes interconnected by connections in a connection-based network, the method comprising:
 1. sending from a first node in a connection used by the VLAN, in a leaf-to-root direction a series of continuity checking packets;
 2. detecting the continuity checking packets at a second node in the connection wherein the second node is the root node or is located between the first node and the root node, the connection passing through at least one intermediate node between the first and second nodes; and,
 3. generating a request for a change in the topology of the VLAN in response to not receiving one or more continuity checking packets at the second node.
2. (Original) The method of claim 1 comprising generating a connection rerouting request in response to the request for a change in the topology of the VLAN.
3. (Original) The method of claim 1 wherein generating a request for a change in the topology of the VLAN comprises generating a topology change notification.
4. (Original) The method of claim 1 wherein the first node is at a leaf of the spanning tree.

5. (Original) The method of claim 4 wherein the second node is at a root of the spanning tree.
6. (Original) The method of claim 1 wherein the connection-based network comprises an ATM network and sending a series of continuity checking packets comprises sending a series of OAM cells.
7. (Canceled)
8. (Previously Presented) A method for providing fault tolerance in a VLAN having a topology defined by a spanning tree having a root node and at least one leaf node, the root and leaf nodes interconnected by connections in a connection-based network, the method comprising:
 - sending from a first node in a connection used by the VLAN, in a leaf-to-root direction a series of continuity checking packets;
 - detecting the continuity checking packets at a second node in the connection wherein the second node is the root node or is located between the first node and the root node; and,
 - generating a request for a change in the topology of the VLAN in response to not receiving one or more continuity checking packets at the second node wherein the connection-based network comprises an ATM network, and sending a series of continuity checking packets comprises sending a series of OAM cells at intervals ~~are~~ in the range of $\frac{1}{2}$ second to 2 seconds.
9. (Original) The method of claim 1 comprising monitoring a time elapsed since receipt of a continuity checking packet at the second node and generating the request for a change in the topology of the VLAN if the time elapsed exceeds a threshold.

10. (Original) The method of claim 1 comprising monitoring a number of continuity checking packets received at the second node within a time window and generating the request for a change in the topology of the VLAN if the number of continuity checking packets received at the second node is less than a threshold number.
11. (Original) The method of claim 1 also comprising sending continuity checking packets from the root node to one or more leaf nodes of the spanning tree and detecting the continuity checking packets at the one or more leaf nodes of the spanning tree.
12. (Previously Presented) A method for providing fault tolerance in an ethernet VLAN comprising a plurality of ethernet segments connected to an ATM network by bridges and an ATM virtual circuit extending between a first one of the bridges and a second one of the bridges, the method comprising:
 - configuring nodes at first and second ends of the virtual circuit respectively to source and sink OAM continuity checking cells;
 - sending from a source port at the first end of the virtual circuit OAM continuity checking cells at a rate of at least one OAM continuity checking cell per 2 seconds;
 - receiving the OAM continuity checking cells at a sink port at the second end of the virtual circuit; and,
 - generating a request for a change in the topology of the VLAN in response to the sink port determining that it has not received a number of the OAM continuity checking cells.
13. (Original) The method of claim 12 comprising generating a signal to trigger a soft permanent virtual circuit

reroute in response to the request for a change in the topology of the VLAN.

14. (Original) The method of claim 12 wherein generating a request for a change in the topology of the VLAN comprises generating a spanning tree protocol topology change notification.
15. (Original) The method of claim 14 wherein generating a request for a change in the topology of the VLAN comprises sending a BPDU to a node of the VLAN.
16. (Original) The method of claim 14 wherein generating a request for a change in the topology of the VLAN comprises sending a BPDU to a root node of the VLAN.
17. (Original) The method of claim 12 wherein the sink port is at a root node of the VLAN, the source port is at a leaf node of the VLAN and the OAM continuity checking cells travel over the connection in a leaf-to-root direction.
18. (Original) The method of claim 12 wherein the VLAN comprises a plurality of segments interconnected in a topology defined by a spanning tree protocol having a root at the second end of the virtual circuit and a leaf at the first end of the virtual circuit.
19. (Original) The method of claim 12 comprising determining that the sink port has not received a predetermined number of the OAM continuity checking cells by determining that a time elapsed since receipt of a most recently received one of the OAM continuity checking cells exceeds a threshold time.

20. (Previously Presented) A method for rerouting a connection in a connection-based network, the connection carrying data traffic between ethernet segments of a VLAN, the method comprising:

configuring nodes at first and second ends of the connection respectively to source and sink continuity checking packets;

sending continuity checking packets at a specified rate from the node at the first end of the connection;

allowing the continuity checking packets to pass along the connection through at least one intermediate node between the node at the first end of the connection and the node at the second end of the connection;

receiving the continuity checking packets at a packet sink at the node at the second end of the connection;

generating a request for a change in the topology of the VLAN in response to the packet sink not receiving a predetermined number of the continuity checking packets;

generating a reroute signal for the connection in response to the request for a change in the topology of the VLAN; and,

rerouting the connection through the connection-based network in response to the reroute signal.

21. (Original) The method of claim 20 wherein the connection-based network comprises an ATM network and the continuity checking packets comprise OAM cells.

22. (Original) The method of claim 20 wherein the VLAN comprises a plurality of segments interconnected in a topology defined by a spanning tree protocol having a root at the second end of the connection and a leaf at the first end of the connection.

23. (Previously Presented) The method of claim 21 comprising determining that the cell sink has not received a predetermined number of the OAM cells by determining that a time elapsed since receipt of a most recently received one of the OAM cells exceeds a threshold time.

24. (Original) The method of claim 23 wherein the connection comprises a soft permanent virtual circuit and the reroute signal comprises a VC reroute signal.

25 to 35 (Canceled)

36. (Previously Presented) A method for providing fault tolerance in a VLAN having a topology, the VLAN comprising a plurality of segments interconnected by connections in an ATM network the method comprising:

at a cell source on one of the connections generating a series of continuity checking cells;

at a cell sink on the one of the connections receiving the continuity checking cells;

between generating the continuity checking cells and receiving the continuity checking cells, allowing the continuity checking cells to pass along the one of the connections through at least one intermediate node on the one of the connections, the intermediate node between the cell source and the cell sink;

determining that a number of the continuity checking cells sent by the cell source have not been received at the cell sink;

generating a fault indication in response to determining that a number of the continuity checking cells have not been received at the cell sink; and,

triggering a change in the topology of the VLAN in response to the fault indication.

37. (Previously Presented) The method of claim 8 comprising generating a connection rerouting request in response to the request for a change in the topology of the VLAN.
38. (Previously Presented) The method of claim 8 wherein generating a request for a change in the topology of the VLAN comprises generating a topology change notification.
39. (Previously Presented) The method of claim 8 wherein the first node is at a leaf of the spanning tree.
40. (Previously Presented) The method of claim 39 wherein the second node is at a root of the spanning tree.
41. (Previously Presented) The method of claim 8 comprising monitoring a time elapsed since receipt of a continuity checking packet at the second node and generating the request for a change in the topology of the VLAN if the time elapsed exceeds a threshold.
42. (Previously Presented) The method of claim 8 comprising monitoring a number of continuity checking packets received at the second node within a time window and generating the request for a change in the topology of the VLAN if the number of continuity checking packets received at the second node is less than a threshold number.
43. (New) The method of claim 36 wherein the continuity checking cells comprise OAM cells.
44. (New) The method of claim 43 comprising generating and sending the OAM cells at equally spaced-apart times.
45. (New) The method of claim 44 comprising generating the fault indication when a time longer than a threshold time

has passed since the cell sink has received one of the OAM cells.

46. (New) The method of claim 22 wherein the spanning tree comprises a plurality of leaves and the method comprises generating the continuity checking packets at each of the plurality of leaves of the spanning tree.
47. (New) The method of claim 46 comprising receiving the continuity checking packets from the plurality of leaves of the spanning tree at corresponding packet sinks located at the root of the spanning tree.
48. (New) The method of claim 47 comprising triggering a VLAN-level fault tolerance mechanism in response to not receiving one or more of the continuity checking packets at the corresponding packet sink.
49. (New) The method of claim 47 wherein the root of the spanning tree is located at a bridge and the bridge generates and sends bridge protocol data units to other bridges located at the leaves of the spanning tree.